

WHAT IS CLAIMED IS:

1. A data source device that provides data in response to requests from a plurality of clients comprising:

5 a disk device configured to store the data including a share volume with specified capacity that is used in common among the plurality of clients and a plurality of specific volumes that are segmented one another, each of which is associated with one of the plurality of clients;

10 a virtual volume management module that allocates a virtual volume to each of the plurality of clients;

a block mapping management module that manages mapping between a virtual block, which is defined in the virtual volume, and a physical block, which is physically defined in the share volume and the specific volume;

15 a command receiving module that receives a read out command from the client, which involves specification of the virtual block; and

a read out control module that reads out the data corresponding to the virtual block from the specific volume associated with the client or the share volume, with reference to the block mapping management module, to be output to the client that has issued the read out command.

20 2. A data source device in accordance with claim 1, wherein the client is allowed to perform remote boot upon receiving data supply from the data source device, and wherein the share volume stores the data required to provide with the plurality of clients at the remote boot.

25 3. A data source device in accordance with claim 1, wherein the block mapping management module maps at least part of virtual blocks on the plurality of virtual volumes with the uniform share block.

30 4. A data source device in accordance with claim 1, wherein a plurality of

node devices having a cache function of the data are connected between the data source device and the plurality of clients, the data source device further comprising:

a specific information output module that outputs specific information to the node device, the specific information being used to determine the volume in which each data is stored, the share volume or the specific volume, in response to the request from the node device.

5. A data source device in accordance with claim 4, wherein the specific information indicates mapping between the virtual block and the physical block.

6. A data source device in accordance with claim 4, wherein the specific information output module outputs the specific information regarding a plurality of virtual blocks at the predetermined schedule regardless of the read out command.

7. A data source device in accordance with claim 4, wherein the request from the node device includes the specification of the virtual block, and wherein the specific information output module outputs the specific information regarding the specified virtual block.

8. A data source device in accordance with claim 1, which is connected with a predetermined upper data source device and the plurality of clients, and is configured as a node device for relaying supply and receipt of data between them, further comprising:

a command transmitting module that transmits the read out command of the data to the upper data source device when the data corresponding to the virtual block, which is specified with the read out command from the client, is not stored in the disk device;

a data receiving module that receives the data and the specific

information from the upper data source device, the specific information indicating the volume in which the data is stored, the share volume or the specific volume;

a forward module that forwards the received data to the client; and

a storage control module that stores the received data in the share  
5 volume or the specific volume, depending on the specific information, and updates the mapping between the virtual block and the physical block on the block mapping management module, based on storage location of the received data.

10 9. A data source device in accordance with claim 8, wherein the specific information is capable of specification regarding commonality of the data between the virtual block and other virtual blocks, the data source device further comprising:

a specific information request module that requests the upper data  
15 source device to output the specific information prior to the transmission of the read out command from the command transmission module,

wherein the command transmission module judges whether or not the data is stored in the disk device, based on the specific information, which is received from the upper data source device, in response to the output request.

20 10. A data source device in accordance with claim 8, wherein the specific information is capable of specification regarding commonality of the data between the virtual block and other virtual blocks, the data source device further comprising:

25 a specification information management module that acquires and manages the specific information from the upper data source device,

wherein the command transmission module judges whether or not the data is stored in the disk device, with reference to the specification information management module.

11. A data source device in accordance with claim 10, wherein the specific information management module manages the mapping between the virtual block and the physical block in the upper data source device as the specific information, and wherein the block mapping management module includes a physical block management module that manages mapping between the physical block on the upper data source device and the physical block on the data source device, and specifies the mapping between the virtual block and the physical block on the data source device, with reference to the specific information management module and the physical block management module.

12. A method for controlling a data source device that provides data stored in a disk device in response to requests from a plurality of clients, comprising the steps of:

managing setting information that defines a share volume with specified capacity and a plurality of specific volumes that are segmented one another in the disk device, the share volume being used in common among the plurality of clients and the specific volume being associated with one of the plurality of clients;

allocating a virtual volume to each of the plurality of clients;

managing mapping between a virtual block, which is defined in the virtual volume, and a physical block, which is physically defined in the share volume and the specific volume;

receiving a read out command , which involves specification of the virtual block from the client; and

reading out data corresponding to the virtual block from the specific volume associated with the client or the share volume, with reference to the block mapping management module, to be output to the client which has issued the read out command.

13. A computer readable recording media in which a computer to control

a data source device that provides data stored in a disk device in response to requests from a plurality of clients, the computer program causes a computer to attain the functions of:

5       managing setting information that defines a share volume with specified capacity and a plurality of specific volumes that are segmented one another in the disk device, the share volume being used in common among the plurality of clients and the specific volume being associated with one of the plurality of clients;

      allocating a virtual volume to each of the plurality of clients;

10       managing mapping between a virtual block, which is defined in the virtual volume, and a physical block, which is physically defined in the share volume and the specific volume;

      receiving a read out command , which involves specification of the virtual block from the client; and

15       reading out data corresponding to the virtual block from the specific volume associated with the client or the share volume, with reference to the block mapping management module, to be output to the client which has issued the read out command.